

## ABSTRACT

### **METHOD AND APPARATUS FOR A DFT/IDFT ENGINE SUPPORTING MULTIPLE X-DSL PROTOCOLS**

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The current invention provides a Fourier transform processor with a wide range of applications including communications, signal processing, medical and other imaging, seismic analysis, radar and other military applications, pattern recognition, signal processing etc.

The Fourier transform processor utilizes discrete circuits each of which is configurable for processing a wide range of sample sizes. A single pipeline supports multiplexed bi-directional transformations between for example the time and frequency domains. In an embodiment of the invention the Fourier Transform processor may be implemented as part of a digital signal processor (DSP). In this embodiment the DSP may implement both the discrete Fourier transform (DFT) and inverse discrete Fourier transform (IDFT) across a wide range of sample sizes and X-DSL protocols. Multiple channels, each with varying ones of the X-DSL protocols can be handled in the same session.

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